Eðlisfræði B (EÐL101G) fall 2022

The teacher for the lectures and exercise sessions: Viðar Guðmundsson (professor of physics; vidar@hi.is), https://vidargudmundsson.org/, https://notendur.hi.is/vidar/

Textbooks: University Physics, 1-3, open**stax**, Rice University, Texas. The books are in constant development with a (CC BY 4.0)-permission. They can be obtained free of charge in various formats on the web:
https://openstax.org/details/books/university-physics-volume-1
https://openstax.org/details/books/university-physics-volume-2
https://openstax.org/details/books/university-physics-volume-3

Course webs: The canvas-web of the course will be used for communication with the students. All information about and concerning the course that can benefit future students will be published at the open web: https://vidargudmundsson.org/ and https://notendur.hi.is/vidar/Nam/EdlB/index.html.

Language: English or Icelandic will be used for the course material and the communication with students as needed.

Approximate schedule and material:

Part	Material	Chapter in the open**stax** books
1	Dimensional analysis, coordinates, vectors	1.4, 2.1-2.4
2	Kinematics in 1-3 dimensions	3.1-3.6, 4.1-4.5
3	Forces, Newtons laws, equations of motion	5.1-5.7
4	Newtons laws, friction	6.1-6.4
5	Work and power	7.1-7.4
5	Energy, conservation, potential- and kinetic energy	8.1-8.5
6	Momentum, angular momentum, inertia of rotation	9.1-9.3, 9.6, 10.1-10.8, 11.1-11.3
	Midterm	
7	Liquids	14.1-14.7
8	Thermodynamics, measurables	1.1-1.6, 2.1-2.4
9	Thermodynamics, laws	3.1-3.6, 4.1-4.7
10	Charges, forces	5.1-5.7
10	Electrical field, flux, conductors	6.1-6.4
11	Electric potential, capacitance, dielectrics	7.1-7.6, 8.1-8.5, 9.1-9.6
12	Magnetic field, magnetism	11.1-11.6, 12.1-12.7

The list of the chapters will be updated as the course proceeds in the fall.

Plan: 2+2 lectures (10:00 - 11:30 in V02-158 Mondays and 08:20 - 09:50 in V02-147 Fridays) and double exercises session once a week (15:00 - 16:30 in V02-147 Tuesdays). Further details of lectures and discussion sessions will be decided with student input in the first lecture.

Due exercises will be published in time on the Canvas-web and the open webs: https://vidargudmundsson.org/ and https://notendur.hi.is/vidar/Nam/EdlB/index.html.

Deadline for handing in solutions is at 23:59 Fridays on the canvas-web. In the exercise sessions the problems will be reviewed and anything regarding the course material can be discussed.

Discussion threads on the canvas-web will be used for the problems and the course material. Individual students or groups can always send an email with questions about the exercises and lectures or a wish for a discussion through zoom or google-meet. All questions and requests will be answered as soon as possible.

Older material: I have taught the course once before and all older material for students can be found on the open webs: https://vidargudmundsson.org//Nam/EdlB/index.html and https://notendur.hi.is/vidar/Nam/EdlB/index.html. There are lecture notes, recorded lectures, exercises and exams with solutions. Each lecture is a screen cast in convenient clips according to the open standard webm with VP8 coding for video and vorbis for the sound. One reason to maintain the open webs is to offer access for anybody to the course material and guarantee that students at each time have the choice to use the older material to guide their work in the course.

Midterm: Midterm will be held online late in October. In the exam will be problems of similar type as in the exercise sessions. Students will have ample time and are expected to submit well structured answers to problems and questions of knowledge.
The midterm weighs 20% in the final course grade.

The weight of exercises is 30%.
The weight of laboratory experiments is 20%.

Final exam: Written 3 hour online exam. All books and notes allowed. The problems will be of similar nature as the exercises through the semester.
The weight of the final exam in the course grade is 30%

Laboratory experiments: Unnar Bjarni Arnalds will give an introduction to the laboratory experiments in the second week of teaching. This will be announced with further details later.

The course start: The first lecture is planed for August 22 at 10:00. No exercise session will be in the first week, but the first set is due Friday August 26.

Cooperation: I welcome cooperation of students working on the exercise sets, as discussion usually leads to better understanding. I expect students to work alone without help on their exams and refer to the growing awareness of honesty in studies and science.

Updated informations: This document is dated and will be updated when needed. All important changes will be posted on the canvas and the open webs.

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Viðar Guðmundsson, 15.08. 2022